

Figure 1

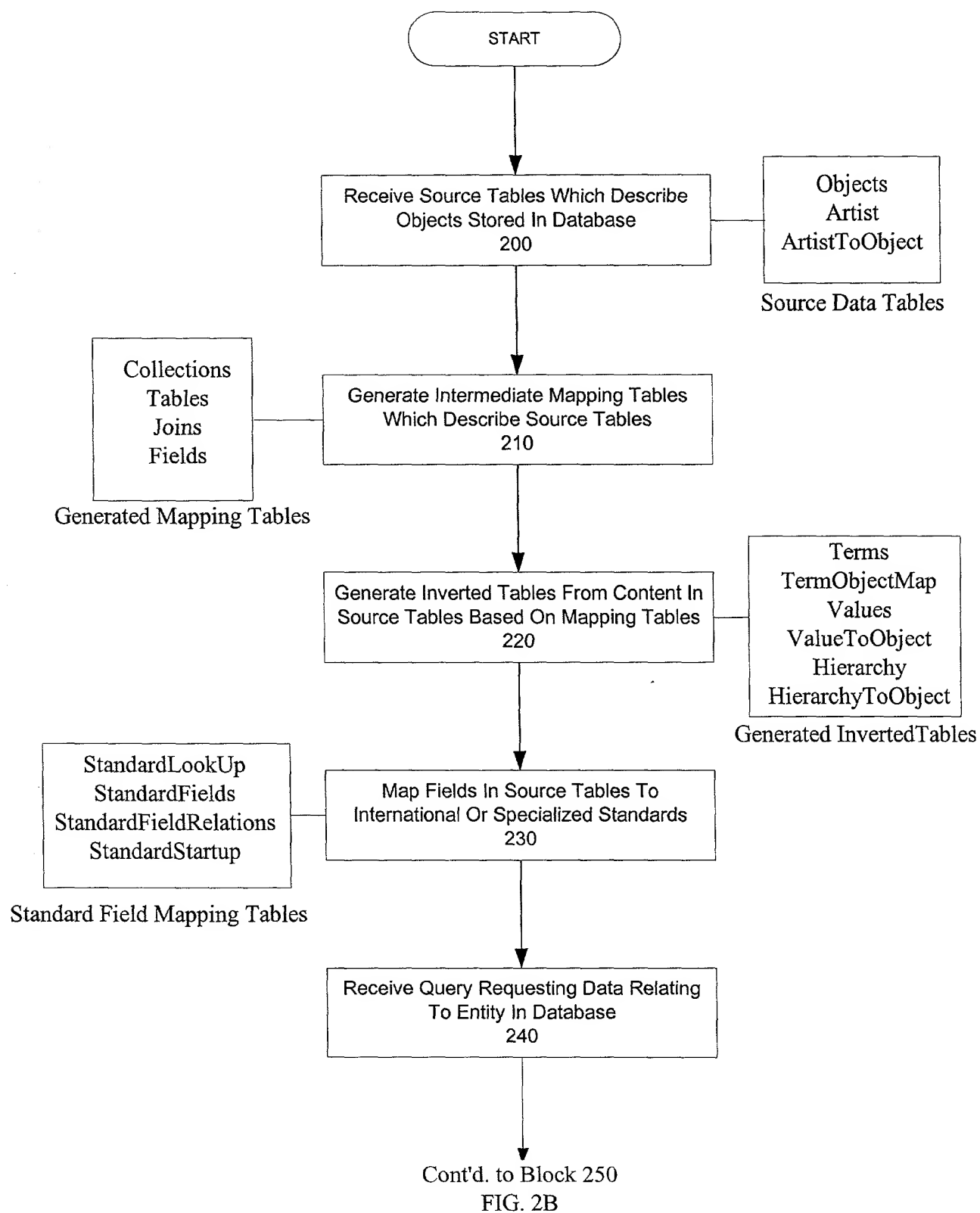


FIG. 2A

Cont'd. from Block 240
FIG. 2A

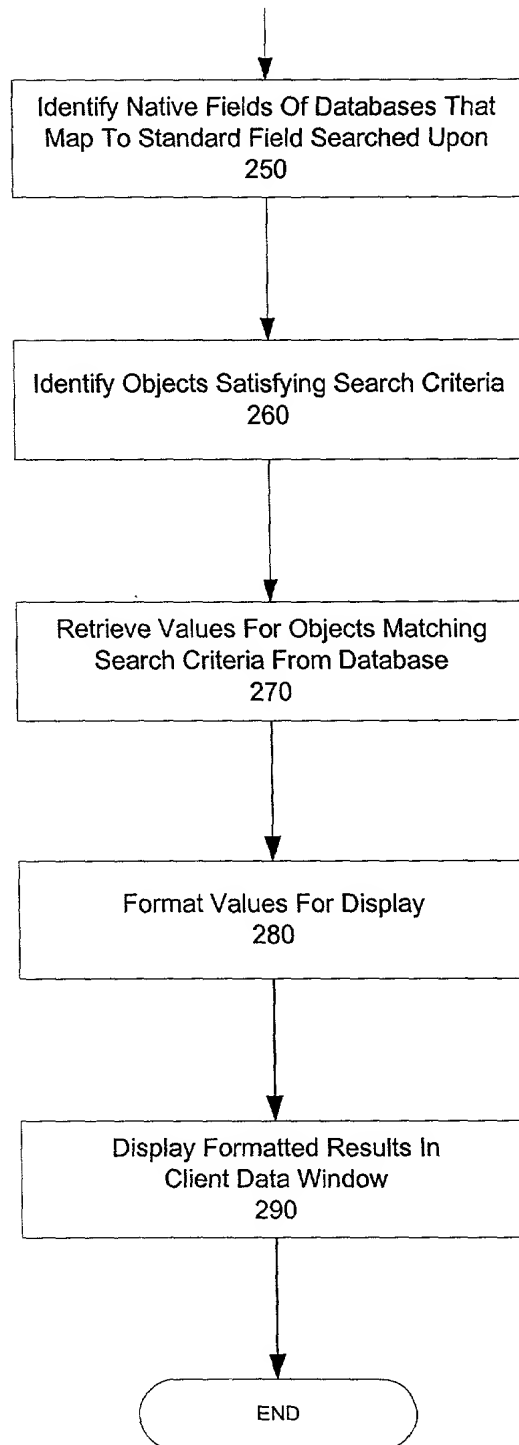


FIG. 2B

Objects Table

| 300 | 302 | 304 | 306 | 308 |
|----------|-----------------------|-----|------|--------|
| ObjectID | Title | | Year | Status |
| 1 | Kleine Welten VII | | 1922 | 1 |
| 2 | Parallel Diagonals | | 1923 | 1 |
| 3 | Landscape with Church | | 1913 | 2 |
| 4 | Mort d'Hamlet | | 1843 | 2 |
| 5 | Arabes D'Oran | | 1833 | 1 |

Status Table

| 310 | 312 | 314 |
|----------|-------------------|-----|
| StatusID | Status | |
| 1 | Restricted Use | |
| 2 | Academic Use Only | |

FIG. 3

Artists Table

400

402

404

406

| ArtistID | ArtistName | DateOfBirth |
|----------|-------------------|-------------|
| 1 | Kandinsky, Vasily | 1866 |
| 2 | Delacroix, Eugène | 1798 |

ArtistsToObject Table

410

412

414

416

| ArtistID | ObjectID | Preferred |
|----------|----------|-----------|
| 1 | 1 | Y |
| 1 | 2 | Y |
| 1 | 3 | Y |
| 2 | 1 | N |
| 2 | 3 | N |
| 2 | 4 | Y |
| 2 | 5 | Y |

FIG. 4

Locations Table

500

502

504

| LocationID | LocationName |
|------------|---------------|
| 1 | U.S. |
| 2 | California |
| 3 | Nevada |
| 4 | San Francisco |
| 5 | Los Angeles |
| 6 | Reno |
| 7 | Las Vegas |
| 8 | Hawaii |
| 9 | Pacific Ocean |

LocationParentChild Table

510

512

514

516

| ParentID | ChildID | Preferred |
|----------|---------|-----------|
| 1 | 2 | Y |
| 1 | 3 | Y |
| 1 | 8 | N |
| 2 | 4 | Y |
| 2 | 5 | Y |
| 3 | 6 | Y |
| 3 | 7 | Y |
| 9 | 8 | Y |

FIG. 5

602

604

606

608

609

Events Table

600

| EventID | LocationID | FromDate | ToDate | Description |
|---------|------------|-----------|-----------|--------------|
| 1 | 2 | June 1880 | June 1890 | Exhibited... |
| 2 | 3 | June 1890 | June 1900 | Exhibited... |
| 3 | 4 | June 1900 | June 1910 | Owned by... |
| 4 | 8 | June 1910 | June 1910 | Owned by... |

610

612

| EventID | ObjectID |
|---------|----------|
| 1 | 1 |
| 2 | 1 |
| 3 | 1 |
| 3 | 2 |
| 4 | 3 |
| 4 | 4 |
| 4 | 5 |

EventsObjects Table

610

622

624

626

People Table

620

| PeopleID | Name | DOB |
|----------|------------------|------|
| 1 | Mullen, Margaret | 1857 |
| 2 | Karrer, Anthony | 1865 |
| 3 | Hauer, Bradford | 1872 |

632

634

| Person | Project |
|--------|---------|
| 1 | 1 |
| 1 | 2 |
| 2 | 1 |
| 3 | 2 |

ProjectMember Table

630

642

644

| ProjectID | Name |
|-----------|--------------------------------|
| 1 | Residence for Eugene Rayford |
| 2 | Marden Opera House Restoration |

Projects Table

640

652

654

| ProjectID | ObjectID |
|-----------|----------|
| 1 | 1 |
| 1 | 2 |
| 1 | 5 |
| 2 | 3 |
| 2 | 4 |
| 2 | 5 |

ProjectsAndObjects Table

650

FIG. 6

ISCollections
Mapping Table
700

702

704

706

| CollectionID | Name | OriginalDataSource |
|--------------|-------------------|--------------------|
| 1 | The Dalton Museum | DSN:c:\asdf\asdfa |

ISTables
Mapping Table
710

712

714

716

717

718

| TableID | CollectionID | TableName | Hierarchy | ParentChild |
|---------|--------------|---------------------|-----------|-------------|
| 1 | 1 | Objects | 0 | 0 |
| 2 | 1 | Projects | 0 | 0 |
| 3 | 1 | People | 0 | 0 |
| 4 | 1 | ProjectMember | 0 | 0 |
| 5 | 1 | ProjectToObject | 0 | 0 |
| 6 | 1 | Artists | 0 | 0 |
| 7 | 1 | ArtistToObject | 0 | 0 |
| 8 | 1 | Locations | 1 | 1 |
| 9 | 1 | Status | 0 | 0 |
| 10 | 1 | LocationParentChild | 0 | 0 |
| 11 | 1 | LocationFlattened | 0 | 0 |
| 12 | 1 | Events | 0 | 0 |
| 13 | 1 | EventToObject | 0 | 0 |

FIG. 7

IRFields
Mapping Table
800

| 801 | 802 | 803 | 804 | 805 | 806 |
|---------|--------------|----------------------|-----------|-------------|---------|
| FieldID | FieldGroupID | Display Name | FieldType | FieldName | TableID |
| 1 | 1 | Title | 1 | Title | 1 |
| 2 | 2 | Year | 2 | Year | 1 |
| 3 | 3 | Status | 1 | Status | 9 |
| 4 | 4 | Project Member DOB | 1 | DateOfBirth | 6 |
| 5 | 5 | Project Name | 1 | Name | 2 |
| 6 | 6 | Artist Name | 1 | ArtistName | 6 |
| 7 | 6 | Artist Year of Birth | 2 | DateOfBirth | 6 |
| 8 | 8 | Location | 1 | LocationNam | 8 |
| 9 | 8 | Date | 2 | Date | 12 |
| 10 | 8 | Description | 1 | Description | 12 |

Cont'd

| 807 | 808 | 809 | 810 |
|---------------|----------------------|--------------------|-------------------|
| Display Order | DataField Searchable | Keyword Searchable | Displayed In Data |
| 1 | 1 | 1 | 1 |
| 2 | 1 | 1 | 1 |
| 3 | 1 | 1 | 1 |
| 4 | 1 | 1 | 1 |
| 5 | 1 | 1 | 1 |
| 6 | 1 | 1 | 1 |
| 7 | 1 | 1 | 1 |
| 8 | 1 | 1 | 1 |
| 9 | 1 | 1 | 1 |
| 10 | 0 | 1 | 1 |

FIG. 8

IRFieldGroups
Mapping Table
820

| 822 | 824 | 826 | 828 | 829 |
|--------------|--------------|----------------|-----------|----------|
| FieldGroupID | CollectionID | DisplayName | FieldType | JoinPath |
| 1 | 1 | Title | 1 | 0 |
| 2 | 1 | Year | 1 | 0 |
| 3 | 1 | Status | 1 | 10 |
| 4 | 1 | Project Member | 1 | 1 |
| 5 | 1 | Project Name | 1 | 3 |
| 6 | 1 | Artist | 2 | 5 |
| 8 | 1 | Events | 2 | 7 |

IS Joins
Mapping Table
900

| 902 | 904 | 906 | 907 | 908 | 909 |
|--------|--------------|----------------|------------|--------------|----------|
| JoinID | StartTableID | StartFieldName | EndTableID | EndFieldName | NextJoin |
| 1 | 3 | PeopleID | 4 | Person | 2 |
| 2 | 4 | Project | 2 | ProjectID | 3 |
| 3 | 2 | ProjectID | 5 | ProjectID | 4 |
| 4 | 5 | ObjectID | 1 | ObjectID | 0 |
| 5 | 6 | AristID | 7 | ArtistID | 6 |
| 6 | 7 | ObjectID | 1 | ObjectID | 0 |
| 7 | 8 | LocationID | 12 | LocationID | 8 |
| 8 | 12 | LocationID | 13 | LocationID | 9 |
| 9 | 13 | ObjectID | 1 | ObjectID | 0 |
| 10 | 9 | StatusID | 1 | Status | 0 |

FIG. 9

Composite of ISTables, IRFields, and IRFieldGroups
1000

| 1002 | 1004 | 1006 | 1007 | 1008 | 1009 |
|------------|--------------------|---------|--------------|-----------|----------|
| FieldGroup | DisplayName | FieldID | FieldName | TableName | JoinPath |
| 1 | Title | 1 | Title | Objects | 0 |
| 2 | Year | 2 | Year | Objects | 0 |
| 3 | Status | 3 | Status | Status | 10 |
| 4 | Project Member DOB | 4 | YearOfBirth | Artists | 1 |
| 5 | Project Name | 5 | Name | Projects | 3 |
| 6 | Artist | 6 | ArtistName | Artists | 5 |
| 6 | Artist | 7 | YearOfBirth | Artists | 5 |
| 8 | Events | 8 | LocationName | Locations | 7 |
| 8 | Events | 9 | Date | Events | 7 |
| 8 | Events | 10 | Description | Events | 7 |

FIG. 10

ISJoins Table Joined With ISTables Table

1100

| 1102 | 1104 | 1106 | 1107 | 1108 | 1109 |
|--------|-----------------|----------------|--------------------|--------------|----------|
| JoinID | TableName | StartFieldName | Tables_1.TableName | EndFieldName | NextJoin |
| 1 | People | PeopleID | ProjectMember | Person | 2 |
| 2 | ProjectMember | Project | Projects | ProjectID | 3 |
| 3 | Projects | ProjectID | ProjectToObject | ProjectID | 4 |
| 4 | ProjectToObject | ObjectID | Objects | ObjectID | 0 |
| 5 | Artists | AristID | ArtistToObject | ArtistID | 6 |
| 6 | ArtistToObject | ObjectID | Objects | ObjectID | 0 |
| 7 | Locations | LocationID | Events | LocationID | 8 |
| 8 | Events | LocationID | EventToObject | LocationID | 9 |
| 9 | EventToObject | ObjectID | Objects | ObjectID | 0 |
| 10 | Status | StatusID | Objects | Status | 0 |

1112

1114

1116

| ArtistName | YearOfBirth | ObjectID |
|-------------------|-------------|----------|
| Kandinsky, Vasily | 1866 | 1 |
| Delacroix, Eugène | 1798 | 1 |
| Kandinsky, Vasily | 1866 | 2 |
| Kandinsky, Vasily | 1866 | 3 |
| Delacroix, Eugène | 1798 | 3 |
| Delacroix, Eugène | 1798 | 4 |
| Delacroix, Eugène | 1798 | 5 |

Result Table From Second Join Example

1110

1132

1134

| ObjectID | Name |
|----------|------------------|
| 1 | Mullen, Margaret |
| 2 | Mullen, Margaret |
| 5 | Mullen, Margaret |
| 1 | Karrer, Anthony |
| 2 | Karrer, Anthony |
| 5 | Karrer, Anthony |
| 3 | Mullen, Margaret |
| 4 | Mullen, Margaret |
| 5 | Mullen, Margaret |
| 3 | Hauer, Bradford |
| 4 | Hauer, Bradford |
| 5 | Hauer, Bradford |

1142

1144

1146

1148

| LocationName | Date | Description | ObjectID |
|---------------|-----------|--------------|----------|
| California | June 1880 | Exhibited... | 1 |
| Nevada | June 1890 | Exhibited... | 1 |
| San Francisco | June 1900 | Owned by... | 1 |
| San Francisco | June 1900 | Owned by... | 2 |
| Hawaii | June 1910 | Owned by... | 3 |
| Hawaii | June 1910 | Owned by... | 4 |

Result Table From Fourth Join Example

1140

Result Table From Third Join Example

Involving Four Join Operations

1130

FIG. 11

| 1202 | 1204 | 1206 |
|-------------------|-------------|----------|
| ArtistName | YearOfBirth | ObjectID |
| Kandinsky, Vasily | 1866 | 1 |
| Delacroix, Eugène | 1798 | 1 |
| Kandinsky, Vasily | 1866 | 2 |
| Kandinsky, Vasily | 1866 | 3 |
| Delacroix, Eugène | 1798 | 3 |
| Delacroix, Eugène | 1798 | 4 |
| Delacroix, Eugène | 1798 | 5 |

Example Source Table
1200

| 1212 | 1214 | 1216 |
|--------|-----------|----------|
| TermID | Keyword | RefCount |
| 1 | kandinsky | 1 |

DTTerms Table
("kandinsky")
1210

| 1222 | 1224 | 1226 |
|--------|----------|---------|
| TermID | ObjectID | FieldID |
| 1 | 1 | 6 |

DTTermObjectMapTable
("kandinsky")
1220

| 1232 | 1234 | 1236 |
|--------|-----------|----------|
| TermID | Keyword | RefCount |
| 1 | kandinsky | 1 |
| 2 | vasilly | 1 |

DTTerms Table
("kandinsky" and "vasilly")
1230

| 1242 | 1244 | 1246 |
|--------|----------|---------|
| TermID | ObjectID | FieldID |
| 1 | 1 | 6 |
| 2 | 1 | 6 |

DTTermObjectMap Table
("kandinsky" and "vasilly")
1240

| 1252 | 1254 | 1256 |
|--------|-----------|----------|
| TermID | Term | RefCount |
| 1 | kandinsky | 1 |
| 2 | vasilly | 1 |
| 3 | delacroix | 1 |
| 4 | eugene | 1 |

DTTerms Table
(for all terms in source table)
1250

| 1262 | 1264 | 1266 |
|--------|----------|---------|
| TermID | ObjectID | FieldID |
| 1 | 1 | 6 |
| 2 | 1 | 6 |
| 3 | 1 | 6 |
| 4 | 1 | 6 |

DTTermObjectMap Table
(for all terms in source table)
1260

FIG. 12

| 1302 | 1304 | 1306 |
|--------|-----------|----------|
| TermID | Term | RefCount |
| 1 | kandinsky | 2 |
| 2 | vasilly | 1 |
| 3 | delacroix | 1 |
| 4 | Eugene | 1 |

DTTerms Table
(for all terms in source table
increase reference count)
1300

| 1312 | 1314 | 1316 |
|--------|----------|---------|
| TermID | ObjectID | FieldID |
| 1 | 1 | 6 |
| 2 | 1 | 6 |
| 3 | 1 | 6 |
| 1 | 2 | 6 |

DTTermObjectMap Table
(for all terms in source table
term associated with two objects)
1310

| 1322 |
|------|
| Term |
| a |
| the |
| an |
| of |

ISStopList Table
1320

FIG. 13

| 1402 | 1404 | 1406 | 1408 |
|---------|-------------------|---------|----------|
| ValueID | ValueText | FieldID | RefCount |
| 1 | Kandinsky, Vasily | 6 | 1 |
| 2 | 1866 | 7 | 1 |
| 3 | Delacroix, Eugène | 6 | 1 |
| 4 | 1798 | 7 | 1 |

DTValueText Table
1400

| 1412 | 1414 | 1416 | 1418 | 1419 |
|---------|----------|--------------|----------|-----------|
| ValueID | ObjectID | DisplayOrder | Grouping | Preferred |
| 1 | 1 | 0 | 0 | 1 |
| 2 | 1 | 0 | 0 | 1 |
| 3 | 1 | 0 | 0 | 1 |
| 4 | 1 | 0 | 0 | 1 |

DTValueText ObjectMapTable
1410

| 1422 | 1424 | 1426 | 1428 | 1429 |
|---------|-------------------|-------------|---------|----------|
| ValueID | ValueText | ValueNumber | FieldID | RefCount |
| 1 | Kandinsky, Vasily | | 6 | 1 |
| 3 | Delacroix, Eugène | | 6 | 1 |

DTValueText Table
1420

| 1432 | 1434 | 1436 | 1438 | 1439 |
|---------|-----------|-------------|---------|----------|
| ValueID | ValueText | ValueNumber | FieldID | RefCount |
| 2 | | 1866 | 7 | 1 |
| 4 | | 1798 | 7 | 1 |

DTValueNumber Table
1430

FIG. 14

| 1502 | 1504 | 1506 | 1507 | 1508 | 1509 |
|------------|---------------|--------------|---------|-----------------|---------|
| StandardID | Standard_Type | StandardName | Version | Standards_Order | Enabled |
| 0 | 3 | CDWA | 1.0 | 5 | 0 |
| 3 | 3 | VRA | 2.0 | 3 | 1 |
| 4 | 3 | VRA v3.0 | 3.0 | 4 | 1 |
| 8 | 1 | HFJ Museum | 1.0 | 0 | 1 |

SLStandardsLookup Table 1500

| 1511 | 1512 | 1513 | 1514 | 1515 |
|------------|--------------|-----------------|-------------------|--------------------------|
| StandardID | StandardName | StandardFieldID | StandardFieldName | StandardFieldDisplayName |
| 8 | HFJ Museum | 1 | Artist | Artist |
| 8 | HFJ Museum | 2 | Artist_Dates | Artist Dates |
| 8 | HFJ Museum | 3 | Nationality | Nationality |

cont.

| 1516 | 1517 | 1518 | 1519 |
|-------------------|------------|---------------------------|---------------------|
| StandardFieldType | LongString | StandardFieldDisplayOrder | StandardPickedField |
| 1 | 2 | 1 | 1 |
| 1 | 2 | 2 | 0 |
| 1 | 2 | 3 | 0 |

SLStandardFields Table 1510

| 1522 | 1524 | 1526 | 1528 | 1529 |
|------------|--------------|-----------------|---------------------|------------------------|
| StandardID | StandardName | StandardFieldID | MappingStandardName | MappingStandardFieldID |
| 8 | HFJ Museum | 1 | CDWA | 102 |
| 8 | HFJ Museum | 2 | CDWA | 104 |
| 8 | HFJ Museum | 3 | CDWA | 111 |

SLFieldStandardRelation Table 1520

| 1531 | 1532 | 1533 | 1534 | 1535 |
|------------|--------------|------------------|-------------------|-------------------|
| StandardID | StandardName | CreateThumbCache | Thumbnail1FieldID | Thumbnail2FieldID |
| 3 | VRA | 1 | 2 | 6 |
| 4 | VRA v3.0 | 0 | 3 | 16 |

contd.

| 1536 | 1537 | 1538 | 1539 | 1540 | 1541 |
|-------------------|-------------------|--------------|--------------|--------------|--------------|
| Thumbnail3FieldID | Thumbnail4FieldID | Sort1FieldID | Sort2FieldID | Sort4FieldID | Sort4FieldID |
| 7 | 14 | 14 | | | |
| 21 | 40 | 40 | | | |

SLStandardStartup Table 1530

FIG. 15

1602

1604

| Keyword | ObjectID |
|-----------|----------|
| kandinsky | 1 |
| kandinsky | 2 |
| kandinsky | 3 |

Result Table
(Terms Search)
1600

1612

1614

| Value | ObjectID |
|-------------------|----------|
| Kandinsky, Vasily | 1 |
| Kandinsky, Vasily | 2 |
| Kandinsky, Vasily | 3 |

Result Table
(Values Search)
1610

1622

1624

1626

1628

1629

| FieldGroupID | FieldType | DisplayName | FieldID | Display Name |
|--------------|-----------|----------------|---------|----------------|
| 1 | 1 | Title | 1 | Title |
| 2 | 1 | Year | 2 | Year |
| 3 | 1 | Status | 3 | Status |
| 4 | 1 | Project Member | 4 | Project Member |
| 5 | 1 | Project Name | 5 | Project Name |
| 6 | 2 | Artist | 6 | Artist Name |
| 6 | 2 | Artist | 7 | Artist Year of |
| 8 | 2 | Events | 8 | Location |
| 8 | 2 | Events | 9 | Date |
| 8 | 2 | Events | 10 | Description |

Field and FieldGroup Table
1620

1632

1634

1636

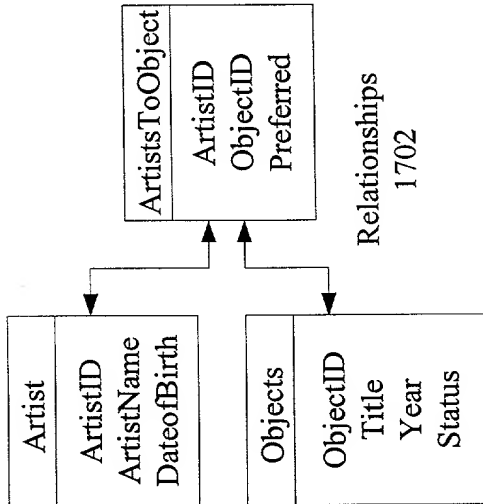
1638

1639

| FieldID | Grouping | Display Name | Value | ObjectID |
|---------|----------|---------------|----------------------|----------|
| 1 | 1 | Title | Kleine Welten VII | 1 |
| 2 | 1 | Year | 1922 | 1 |
| 3 | 1 | Status | Restricted Use | 1 |
| 4 | 1 | Project | Karrer, Anthony | 1 |
| 4 | 2 | Project | Mullen, Margaret | 1 |
| 5 | 1 | Project | Residence for Eugene | 1 |
| 6 | 1 | Artist Name | Kandinsky, Vasily | 1 |
| 6 | 2 | Artist Name | Delacroix, Eugène | 1 |
| 7 | 1 | Year Of Birth | 1866 | 1 |
| 7 | 2 | Year Of Birth | 1798 | 1 |

Value Table
1630

FIG. 16



Relationships
1702

Artist (400)

| ArtistID | ArtistName | DateOfBirth |
|----------|-------------------|-------------|
| 1 | Kandinsky, Vasily | 1922 |
| 2 | Delacroix, Eugene | 1923 |

ArtistToObject (410)

| ArtistID | ObjectID | Preferred |
|----------|----------|-----------|
| 1 | 1 | 1 |
| 1 | 2 | 1 |
| 2 | 1 | 0 |

Source Tables
1700

Intermediate Mapping Tables
1710

Tables (710)

| TableID | CollectionID | TableName | Hierarchy | ParentChild |
|---------|--------------|----------------|-----------|-------------|
| 1 | 1 | Objects | 0 | 0 |
| 2 | 1 | Artists | 0 | 0 |
| 3 | 1 | ArtistToObject | 0 | 0 |

Joins (900)

| JoinID | StartTable | StartFieldName | EndTable |
|--------|---------------|----------------|----------------|
| 1 | Artist | ArtistID | ArtistToObject |
| 2 | ArtistToObjec | ArtistToObject | Objects |

Joins (900) contd...

| EndFieldName | NextJoin |
|--------------|----------|
| ArtistID | 2 |
| ObjectID | 0 |

Fields (800)

| FieldID | DisplayName | FieldName | FieldType |
|---------|-------------|-------------|-----------|
| 6 | ArtistName | ArtistName | String |
| 7 | DateofBirth | DateofBirth | Number |

Fields (800) contd...

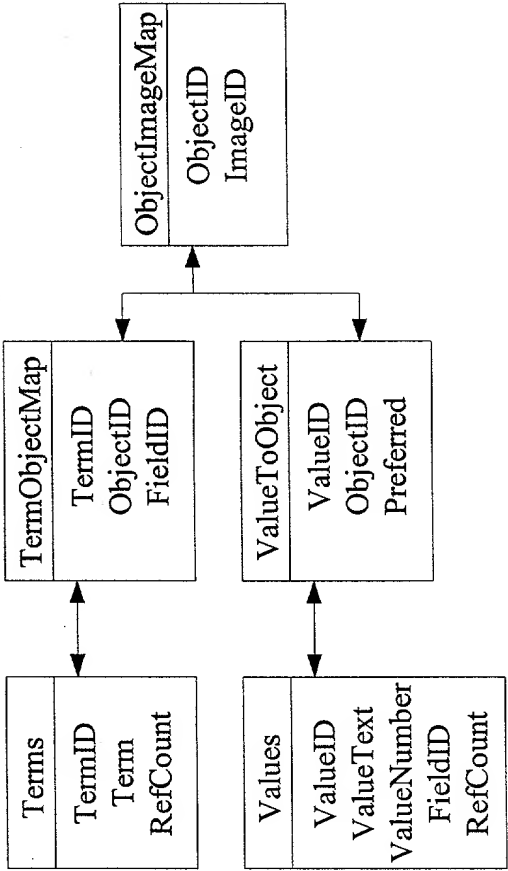
| Table | NextJoin |
|---------|----------|
| Artists | 1 |
| Artists | 1 |

Results of Constructed SQL Query (1712)

| ArtistName | YearofBirth | ObjectID |
|-------------------|-------------|----------|
| Kandinsky, Vasily | 1866 | 1 |
| Delacroix, Eugene | 1798 | 1 |
| Kandinsky, Vasily | 1866 | 2 |

FIG. 17A

FIG. 17B



Relationships
1722

Terms (1300)

| TermID | Term | RefCount |
|--------|-----------|----------|
| 1 | Kandinsky | 2 |
| 2 | Vasily | 2 |
| 3 | Delacroix | 1 |
| 4 | Eugene | 1 |
| 5 | 1866 | 1 |
| 6 | 1798 | 1 |

TermObjectMap (1310)

| TermID | ObjectID | FieldID |
|--------|----------|---------|
| 1 | 1 | 6 |
| 2 | 1 | 6 |
| 3 | 1 | 6 |
| 4 | 1 | 6 |
| 1 | 2 | 6 |
| 2 | 2 | 6 |

Values (1420, 1430)

| ValueID | ValueText | ValueNumber | FieldID | RefCount | Enabled |
|---------|-------------------|-------------|---------|----------|---------|
| 1 | Kandinsky, Vasily | 1866 | 6 | 2 | 1 |
| 2 | | | 7 | 2 | 1 |
| 3 | Delacroix, Eugene | 1798 | 6 | 1 | 1 |
| 4 | | | 7 | 1 | 1 |

ValueToObject (1410)

| ValueID | ObjectID | Preferred |
|---------|----------|-----------|
| 1 | 1 | 1 |
| 2 | 1 | 1 |
| 3 | 1 | 0 |
| 4 | 1 | 0 |
| 1 | 2 | 1 |
| 2 | 2 | 1 |